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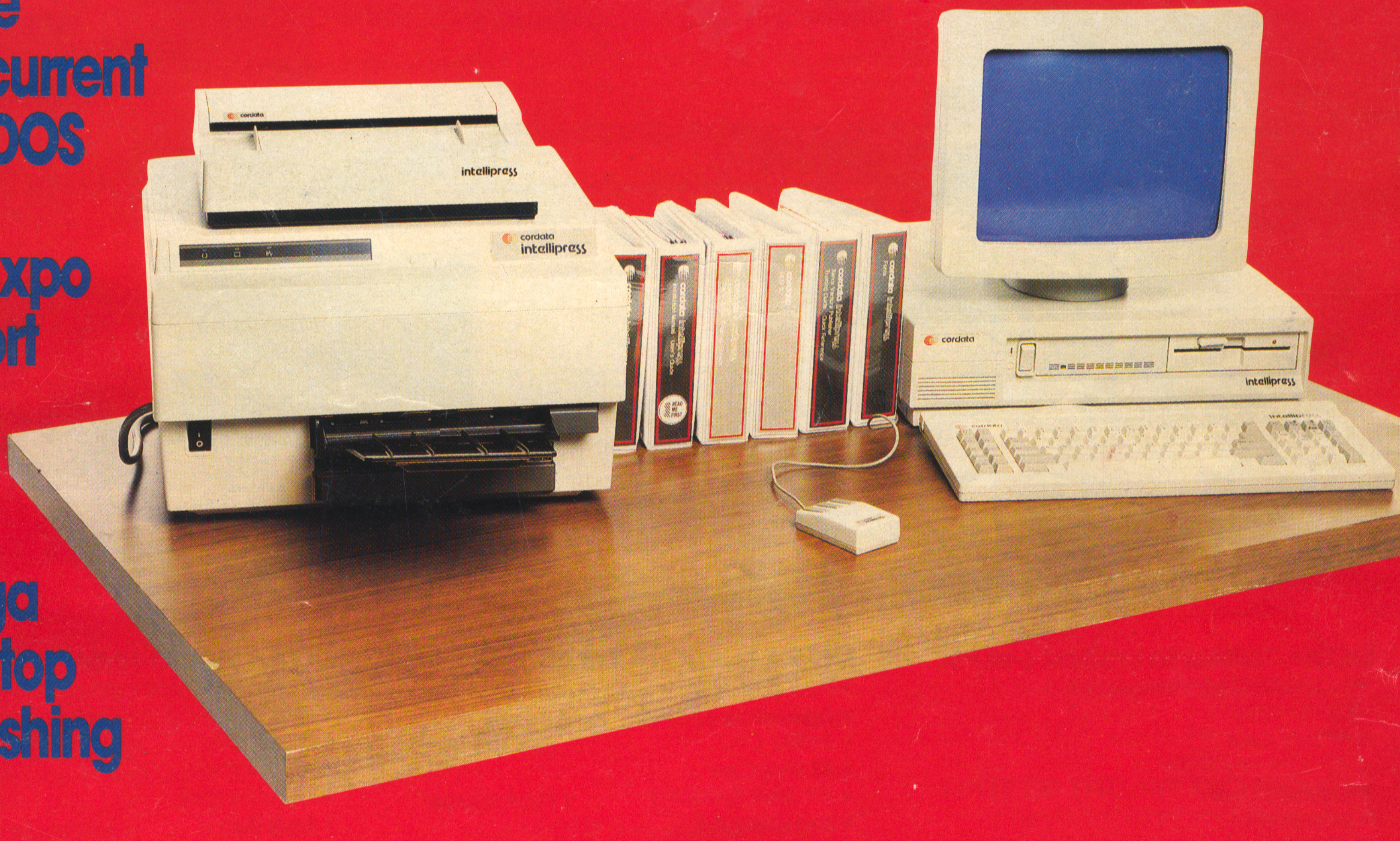

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ATARI ST

DBASIC For The Atari ST

by Robert Westcott

What's faster than a speeding microchip, able to leap tall CPUs in a single bound, and perhaps the most innovative piece of software to hit the ST market?

The answer, in case you haven't heard, is DTACK Grounded Inc.'s DBASIC for the Atari ST.

Innovative, radical, alien to anything STphiles have ever seen, and yes fast—all accurately describe DBASIC.

Useful, pleasant to use, worth $42.95? You be the judge, after reading this article and maybe getting hold of one of the freebie DBASIC disks floating out there in Atariland (the disks are more or less free, you order and pay for the manual).

DBASIC is more than just another BASIC. Raidcal from its inception, it starts by tossing TOS and continues to march to its own drummer henceforth.

Tossing TOS ? That's radical, and that's exactly what Hal Hardenbergh and his DTACK crew did with DBASIC. Not only is DBASIC an innovative language, it works within its own innovative operating system that replaces TOS, and steals only a snitch here and a snitch there from TOS ROMs.

In the words of its creators, DBASIC is "a self-contained programming environment which includes the language itself, an operating system, and a monitor." If you understand "monitor" to mean what I understand it to mean, that part of their description is a "Joe Isuzuism".

Editor's Note: A software "Monitor" is a program that boots the disk operating system, allows examination of RAM and performs other monitoring functions.

You still buy the video monitor and all other hardware from, to use their terminology, "Kindly Uncle Jack."

DBASIC replaces the icons, mice, and pull-down menus ST owners have come to expect with a plain screen, and a handful of commands, and there are no prompts or Help screens to point the way. In return, the user gets increased speed.

With DBASIC, you have to forget you are using an ST, and return to those thrilling days of yesteryear when keyboards were king, mice were chased by cats, and menus were found in restaurants and not on CRTs.

Quoting honorable DTACK Guru again (he definitely should get a Pulitzer for most readable and corniest manual), "DBASIC's principal programmer thinks "Kindly Uncle Jack" should have left the Mackintosh stuff for the Yuppies who like mice because they can still hold a Perrier-and-water (on the rocks) in their other hand. But he didn't, and so the ST comes with wonderful GEM (long pause for applause to subside)."

Why is DBASIC so radical and why is it so incompatible with TOS? The answer lies in the fact that DBASIC is an interactive incremental compiler, and to save space and speed uses the zero page of the 68000 chip. Using the zero page allows for 16-bit action, and addresses which reference library routines that are permanently located in the 68000's zero page. The alternative, of course, is a heavy dose of mapping of those addresses into relocatable code. This would drastically slow DBASIC down.

DBASIC, using this convention, boots-up incredibly fast, much faster than booting up TOS (even from ROMs) and then loading a traditional BASIC. Since there is no searching the disk for library routines, DBASIC works very fast.

Disk use is a major factor in program speed for all computer systems. Since the slowest part of computer operation is the disk operation. Many of us choose to use ramdisks and hard drives because they work faster. Those of us with hard drives and a penchant for speed (and reliability) tend to frequently use disk utilities to unfragment our drives, and optimize disk seek and retrieval.

With the exception of Apple and a few other oddballs, most operating systems today have adopted industry standards for disk formatting and access. This explains why you can access a 3½ inch MSDOS diskette on your ST. Both systems use a format of eighty tracks of nine sectors each. Both also re-use disk space where files have been deleted, and both are thus susceptible to fragmentation of even newly-written files.

While losing some speed due to fragmentation, these systems do make the most of disk space, and you are able to genuinely re-use the space where a file has been deleted.

DBASIC, as you might by now expect, takes a different (pardon the pun) track on disk use. The first track of the disk is traditionally formatted, allowing the disk to boot. After that, instead of using the conventional nine sectors of 512 bytes each per track, DBASIC uses five "fat" sectors of 1024 bytes each. The result is an increase of 500 bytes per track, roughly a ten percent increase.

Another difference between the disk conventions is that while TOS and MSDOS use a more-or-less parallel format structure, DBASIC staggers the sectors so that the head does not have to wait an extra rotation to read sector one of the next track when it has finished with the last track. Again, what we have is an attempt at speed optimization.

DBASIC, unlike the other conventions, does not "delete" files. Instead, it "scratches" them. The difference is much more than semantics. With TOS and MSDOS, the space formerly occupied by a deleted file can be re-used (i.e. written into). With DBASIC, when a file is "scratched," a bit in the catalog directory is flagged, indicating that at the next Copy procedure, the file is to be left behind. "Scratched" files can be easily "unscratched" with the appropriate call, and even "scratched" files are copied to another disk when the "BACKUP" command is used instead of the "COPY" command. "COPY," on the other hand, does not copy "scratched" files.

What does all this mean to the user? First, it means that TOS and DBASIC are exclusive of each other in every sense of the word.

Secondly, what we have is a tradeoff of features. To gain speed, the creators of DBASIC have thrown out familiar and useful features inherent in TOS and many other operating systems. For better, or for worse, they have chosen to go against the conventions for operating systems.

While I am not hopelessly enamored of mice, and am writing this particular article using mouseless software (Word Writer PC), I do like the little rodents and find that they make many applications less painful and actually quicker. IBM saw the light with regard to mice, and now Big Blue features the rodents in PS-2 hardware, therefore we can expect a larger role for them once OS/2 becomes a reality.

I also like standardization, and will sacrifice some optimization for it. Standardization allows for me to expend my time and energies to accomplish the task at hand, rather than having to first learn to use an odd set of tools. When I choose software, I look not only for power and features, but also for standardization and ease of use.

Word processors, in my opinion, should, at least be of the what-you-see-is-what-you-get (WYSIWYG) variety, have logical commands (like Alternate-I for Italics), and have mouse accomodation.

Non-standard formats, such as those used in DBASIC create all sorts of problems for those of us with more to do than learn another system.

While I am by no means a world-class programmer, I would like to be able to port programs, and I hate keyboards. DBASIC forces me, if I want to port something to it, to type in the whole shootin' match, something I really don't have the time or interest to do. With a standard format, transferring a listing and making the necessary modifications would be a lot easier.

Non-standard formats also are anathemas to hard disks and ramdisks, and there seems to be no accommodation for either of these disk types with DBASIC. I say "seems" because I can't find any and DBASIC has zero customer support.

Zero Customer Support! You heard right. To quote from the author, "We are not going to provide support for our BASIC. We won't answer questions either over the phone or via mail. If you are the sort to demand support for your $39.95 (or for your free manual or disk), that is your privilege—but you'll have to do business with a company that is like-minded....If you think we are just awful because of this policy, we ain't gonna argue....and just to make the record complete, we passed up the opportunity to join the Peace Corps a couple of decades back, and we pass up an opportunity to donate all our worldly possessions to charity each and every day."

With DBASIC, what you see is what you get, and all you get, excepting fliers and revisions sent periodically to User's Groups. There is NO, repeat

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Metacomco Releases New Pascal 2 For Atari ST

Metacomco, is pleased to announce it's new Pascal 2 compiler and development system for the Atari ST.

The New Pascal 2 Development System replaces Metacomco's previous MCC Pascal version 1.35. The rationale behind the new Pascal was to provide an ISO standard compiler core, but with a large range of extensions for programmers wishing to access all the technically exiting features of the Atari ST's Motorola 68000 processor and GEM environment.

According to Andrew Spencer, Metacomco Products manager, "An ISO standard Pascal restricts the programming potential of the ST, although it is useful as a defined standard easing portability from one machine to another. We have produced the most powerful and the most flexible Pascal development system for the ST."

The Pascal 2 compiler now offers single and double precision floating point arithmetic, full 32 bit pointers, sequential and random access files, dynamic strings, conditional compilation and separate compilation. Other powerful extensions include bitwise integer operations; otherwise in case statements; binary, decimal, octal and hexadecimal integer and character constants; I/O error handling and many other extensions to the previous version.

For more information contact: Metacomco, 26 Portland Square, Bristol BS2 8RZ UK. ●

The Best Of ST Public Domain

Reviewed by Robert Westcott

Big Money and Vanna too! Too much to expect from an ST Public Domain offering? Well, maybe just a little bit, but Bob Pyle's ST implementation of the popular Wheel-Of-Fortune game is a sure winner, and a good way to take a break from the rigors of serious computing.

In my unscientific survey of ST users' favorite public domain offerings, so far the games category ranks right up there with utilities and communications programs, and for my money, or lack thereof, Wheel-Of-Fortune is the best-implemented and most entertaining offering I have seen so far. Running a close second, and the object of a later column, are the ST P.D. Monopoly versions.

Wheel-Of-Fortune as a game is appealing for several reasons. First of all, man is basically greedy, let's admit it, and the prospect of winning lots of loot, even when you are pretending (my ST failed to dispense cash, despite my dogged efforts to get it to), is attractive. Secondly, most of us would like to be adventurous, but are sensible enough not to take our nest egg out to Vegas to try our luck. Thirdly, most of us like to exercise our brains in areas that don't seem like work, and figuring out these puzzles seems to fit the bill. Finally, for some reason, we like competition, and Wheel-Of-Fortune is an excellent place for families and friends to compete on reasonably equal footing.

Enough pop psychology, and on to the game itself. For the purposes of this article, we will assume that you are at least vaguely familiar with the game as played on television.

To start with, you need an ST with a color monitor set for low resolution. Opening the window to the drive you have the game disk in, you see a number of icons. For now, forget about all but the “WHEEL2_0.PRG” icon, and double-click on that one. You will learn later that there are other files and programs, including a shell program that puts them all together, but that's for later. Let's get on with the game.

After being welcomed to the game (sans Pat and Vanna) you are asked how many players (2 or 3), and are asked to enter their names. After making sure you gave the right information (you'll have to try the game to see how this is done), the program then asks you to select a puzzle file.

Four puzzle files come with the game itself, and numerous others are available on Bulletin Boards. You are also supplied the software to make up your own puzzle files. This is a particularly nice feature if you have a particular area of interest, say sports, Bible trivia, or current events. You can also make this into an educational game by using the information to be learned as puzzle material. Puzzle files each contain 104 puzzles.

After you make your choice of puzzle files (the four that come with the program all have miscellaneous categories), the main game display comes into view.

Round totals, game totals, and free spins are displayed in the upper-left-hand quadrant of the screen. To the right of that is the puzzle itself, with the category depicted at the bottom of the puzzle. Occupying the lower-left quadrant is the Wheel, one-fourth of it showing on the screen, along with a Touch Box that I will describe later. In the lower-right quadrant is a message box (in place of Pat and Vanna to direct you and cheer you on), boxes to select buying a vowel, spinning, and solving the puzzle, and of course the Letter Board.

Letters that have already been selected are depicted in reverse video, so you don't waste your turn selecting an already-used letter. If you ignore this aide and select an already-used letter anyway, you lose your turn.

Wheel-Of-Fortune is played using a mouse, and the selector-icon is the pointing finger.

To start the game, whoever is up first spins, and to spin you click the “Spin” box, which can be done two different ways. If you are the happy-go-lucky type, you can make a random-velocity spin by pointing at the “Spin” box and clicking the left button of the mouse. If you want to control your spin, point at the “Spin” box and hold down on the right mouse button until the “Touch” box shows the desired velocity, whereupon you let up on the right mouse button to start the spin.

Controlled spinning works about four-fifths of the time, and the twenty percent failure rate is intentional, reflecting “the vagaries of human abilities and the Adrenalin rush of a TV appearance...once in a while you ‘slip’ and the wheel will spin randomly.” When this happens, an “oops” shows up on the touch box. “After all, nobody's perfect” to make a bad pun, nice touch, Mr. Pyle.

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DBASIC

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NO personal customer support, and that's the way it is.

Format aside, and lack of customer support aside, how is DBASIC as a BASIC, and how good is the package?

First, let it be said, that while DBASIC is radical in its operation, and has a few of its own nuances, it is in many ways, programming-wise, a very traditional BASIC. Like traditional BASICS, it uses line numbers, and uses most of the traditional program statements in the same way other BASICS do.

Unlike traditional BASICs, DBASIC does not support the data type “numeric”. Instead, DBASIC has the two distinct data types “floating point” and “integer”. With many other BASICs, floating point and integer numbers can be mixed in expressions, since with them, all arithmetic is performed in floating point.

To increase speed (since integer arithmetic is faster than floating point), DBASIC separates the number types. Since integers and floating point numbers must at times be mixed in expressins, DBASIC provides functions to accept the other kind of numerical argument in expressions. By using the “FLT()” function, an integer argument may be used in a floating point expression (returning a floating point value) and by using the “FIX()” function, a floating point argument may be used in an integer expression (returning an integer value). To me this sounds like shades of Modula-2.

Another DBASIC distinctive is that it does not have any reserved words. The pratical consequences of this is that words which represent commands or statements must be followed by a space character or a termination character (Enter).

DBASIC syntax is built on what the user does with the beginning of a line. If you start with a number, DBASIC assumes you are entering a program line. If you start with anything else, DBASIC assumes you are entering a command. Since its editor is not really an editor in the classic sense but rather an editing environment, this distinction is necessary.

As there is no separation in the Editor screen to divide program and command lines, line numbers are not automatically generated. To put it politely, this is a thinking man's environment.

DBASIC, like a number of modern languages, is case sensitive. Verbs (commands, statements, functions) must be in upper case. Variable names may be in any combination of upper and lower case, and you can use the same sequence of letters to name several variables merely by changing the case of some of the letters.

In regard to strings, DBASIC returns to the world of tradition by emulating Bellevue strings, thus easing the pain in porting programs (you still have to type the darn things in).

In regard to the rest of DBASIC's BASIC implementation, it is mostly traditional, and the experienced Basic programmer should feel quite at home with the language, and should appreciate the case sensitivity.

Documentation with DBASIC is like little girls. When it's good it's very good, and when it's bad it's awful. Most of the time it's very good, with heavy doses of corny humor thrown in to wet otherwise dry subject areas. It has a clarity I have rarely found in documentation. Other documentation, such as that for the miserable editor (I put it in a class with Edlin) leaves a lot to the imagination.

As part of the package, a number of demos and utilities are included, and given the radical nature of the environment, they are needed and appreciated. The “Backup” utility creates an exact copy of the DBASIC source disk, something you cannot do from GEM because of the format differences. “Backup” is also used to copy other DBASIC disks when you want to save the “scratched” files as explained earlier.

The included “Copy” program copies all “unscratched” files, leaving the “scratched” files behind. By using the “Copy” utility regularly, you eliminate fragmentation completely, and optimize your disk access speed.

The “Format” utility, you guessed it, formats disks, either as pure data disks, or as system disks with DBASIC built in. It will format disks as either single or double sided.

For those ST owners with at least a meg of memory and at least one double-sided drive, the utility programs “SSTODS” and “DSTOSS” allow copying of files back and forth from single to double sided disks.

A utility called “DISKPRIM” allows you to read or write any given sector on either a TOS disk or a DBASIC disk.

For those wishing to send and receive DBASIC programs via modem, utilities appropriately named “Upload” and “Download” are included to convert DBASIC files to TOS binary and back. Until someone writes a communications package in DBASIC this will be necessary. Remember, you can't run DBASIC and TOS at the same time, and the disk formats are incompatible.

As to an overall impression of the DBASIC package, I have mixed feelings. It is certainly a fast BASIC, though not that much faster than the more traditional GFA BASIC.

Its creators themselves said you would either love or hate DBASIC. I don't hate it, but I do find it so radical that I find it annoying, especially when I have the GFA BASIC alternative. Face it, operating systems are habit-forming, and most of us do not like to shift gears a lot. That's why we buy cars with automatic transmissions and stick to a handful of programs and systems for most of our computing.

The ST market in the U.S. at least is principally a home and small-business market. People buy the ST mainly because it's easy to use. More and more people cut their teeth on computers with the ST and on programming with an ST BASIC. Because of this, these people aren't as interested in supersonic speed as they are ease of use. For such people I cannot recommend DBASIC.

Others in the ST community are adventurous, hackers in the best sense of the word. For them, I heartily recommend the DBASIC package. It is novel, fast, and the manual would make Henny Youngman jealous. Technical writers from the major software houses could learn from this masterpiece of technojournalism.

The DBASIC disk is being distributed with the blessing of DTACK Grounded free of charge by many ST users' groups and ST dealers. To get the whole package directly, you need to send $42.95 to DTACK, 1570 Pacheco B-7, Santa Fe, NM 87501. DTACK takes phone orders if you have VISA or MASTERCARD (505-989-9576). •

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COMMODORE

Word Processing on the C128 —Users Perspective

by Cheryl Peterson

A few months ago, I asked readers of my CP/M Column to write and let me know what word processor (WP) they were using and why. I encouraged those who wrote to reveal any interesting things they had discovered about the packages they used. The response was marvelous and the results were very interesting.

I received a couple dozen letters on the subject. About half of the respondents were using more than one word processor. This is not really surprising, since some WPs are better at specific types of writing than others are. Some tasks require complex functions, while others don't. Using a word processor to create a letter, a newsletter, or a book all require different capabilities.

One thing that really struck me about the survey was a few unusual packages being used. I got a letter from one person using VDE 13, a public domain 8K CP/M program with another PD program called Bradford for text formatting. A hand written post card came from someone claiming to use Kwik-write or Speedscript depending on his needs.

The rest of the letters endorsed Speedscript, Vizawrite Classic, Superscript, WordPro 128, PaperClip II, Word Writer 128, and the big favorite Pocket Writer from Digital Solutions. (Ok, you can all jump on me now. But I still don't especially like Pocket Writer.)

Since there were so many who supported Pocket Writer, I'll just highlight some of the comments on that one. The others had fewer supporters, but good comments so I'll quote much of what one person had to say about them.

Let's see what you had to say.

Preliminary note:

Frank Lambert writes in support of Pocket Writer. His main comment though is to take me to task about a comment I made.

In your article you state, "I have yet to see a word processor for the 128 that can handle very large files." (Yep, that's what I said!)

Apparently you are unaware of Pocket Writer 2 from Digital Solutions, Inc. I have been using this WP for the past six months and have found it to be everything I could want in a WP and then some. Pocket Writer is a very simple to use, what you see is what you get (WYSIWYG) WP that leaves up to 64K available for on-screen documents. "If this is not enough the file may be split into two or more parts and linked to load and print automatically in sequence."

I have never used WordStar so I cannot compare features between the two WPs.

Since I can see that others might have come to a similar conclusion about that comment of mine, I'd like to explain it. While Pocket Writer will indeed allow the user to manipulate very large files, Pocket Writer does not handle large files. It lets the user handle them. There is a big difference.

With WordStar, this is not the case. When you load a file from disk, WordStar renames the file on disk and adds the extension .BAK to it. It reads the opening segment of the file into memory and creates two temporary files on the disk. At first one segment is empty and the other contains the rest of the file that WordStar couldn't fit in memory.

You cursor along or type along until you reach the end of the first segment that fits in memory. When you cross the point where that segment ends, WordStar hesitates for a few seconds while it writes the edited segment you just did into the empty temporary file and then pulls off the next section of text and puts it in memory.

WordStar will perform this action as many times as necessary, always updating the disk file as it reads in new segments of text. It does this all automatically. Since it does keep a BAK file and the two temporary files on the disk, you are effectively limited to files that occupy 1/3 of the disk. You can reconfigure WordStar to destroy the BAK file, thereby allowing you to edit a file up to 1/2 of disk size.

If you are using a hard disk drive (as most book authors do), you can manipulate some awfully large files.

Besides offering the advantage of the user not having to deal with linked files (although WordStar does have a way of handling linked files), if the power fails, you can usually rename the temporary files created by WordStar on your disk and with the exception of the segment that was in memory, you will have all of your edits on the disk. You must do a little reconstruction, but all is not lost.

First, the rest of comments about Pocket Writer from George Whitney who also endorsed Speedscript in his letter.

I had the older version, called Paperback Writer and never got very far with it, but Pocket Writer 2 has taken out virtually all of the original problems. The "menu" rather than the "on screen" formatting make it only slightly slower to get going and after a while I hardly noticed the difference.

It has many, many virtues, one of which is the ease of underlining and entering italics, which is very difficult with Speedscript and the old Gemini. Now that I have mastered the formatting, which was not well explained in the manual, it really runs rings around Speedscript. I especially like the way in which it tells me exactly where I am all the time, both as to pages and where I am on the page.

It addresses envelopes very easily and can be pre-formatted on the directory for almost any style of writing. Normally I set up each new disk with the following pre-formatted functions: Correspondence (with letterhead, and position for date and salutation): textual material, addressing large envelopes and feeding single sheets (which is the way that I use up the otherwise wasted paper from starting to write on pin-feed paper). These go into the directory and are brought up quickly as required.

All in all, it is a very satisfactory product for me and I find it especially helpful in sermon writing where I want to keep close track of the number of pages as I go. I especially like the ability to set up an index quickly and easily, something that is hardly mentioned at all in the manual, but works like a charm. I doubt if it can be used for book-length, but for writing manuals it is indispensable.

Now as to its problems. The publishers are outrageously optimistic in their advertising. For anyone not used to computers, their claims as to simplicity of learning are grossly exaggerated. You have to use the manual, which is not well-written or organized, and much too technical in terminology.

This, of course, is a problem that has plagued the software industry for years. As a former English teacher, newspaperman and professional writer all my life, I wince at the vague terminology used by the technical writers when manuals are written. There are whole sections of the Pocket

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ATARI

Applying The Atari

by Jeff Brenner

This month we'll read some reader mail, learn about more memory expansion articles, look at some user group newsletters, and learn of one reader's idea for a new 8-bit dream product.

Reader Mail

Dear Jeff:

I recently discovered *Computer Shopper*, and I find your Atari articles most informative and interesting. Can you please send me a listing of the program disks you have offered through your column and their prices? Thank you and keep up the excellent work!

John Doherty
Canoga Park, California

Back-issue diskettes are no longer available from me, as I have stated in the past, but a number of my programs (enhanced versions) are being distributed by Twenty-Fifth Century (P.O. Box 8042, Hicksville, NY 11802). You can obtain a free 28-page catalog by mentioning that you are an "Applying The Atari" reader and enclosing a 39-cent stamp for postage.

Dear Jeff:

In regard to Ben Bembenek's letter (August 1987) concerning Electronic Art's One-on-One, I was fortunate enough to notice either in Analog or Antic some time ago that a booting problem with the 130XE exists with One-on-One. The Translator Disk is of no help unless you follow these steps exactly:

(1) Boot Side B of the Translator Disk with the Option button depressed.
(2) Replace with One-on-One and follow on-screen instructions.
(3) As soon as the I/O noise stops (you can also wait until the busy light goes out), and while holding down the option key with the right hand, quickly cut off and on the 130XE power switch with the left hand. This works about 80% of the time.
(4) If the program is going to load properly, the EA logo will get very white (in color).
(5) Repeat if the program does not load with one try. Timing and a fast left hand are important.
(6) Do not hit the reset key or you will have to reboot the program as described earlier.

Here are some game hints: To play better defense, keep the button depressed as you manuever on defense. To play better offense, back the defensive player in, and occasionally use "fade away" shots by pulling the stick toward you or toward the corners as you shoot.

Kenneth Hudson
Indianola, Mississippi

Many thanks for writing and supplementing John Soquel's response printed last month. Hopefully Ben and other 130XE owners will now be able to load and run One-on-One.

Dear Jeff:

I just got the September issue of *Computer Shopper* and read your note

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ATARI

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concerning "credit where credit is due" (with regard to memory expansion projects designed by David Byrd). It's ironic that I was just about to drop you a line with the latest mods we have received. Enclosed you will find three modifications. As you can see, one is the latest revision of the David Byrd mod. It is the latest in the 800/Axlon compatible modifications. It is also the easiest to do in that no internal mods are required to the computer other than the second memory board and the ROM board. There is even a kit available from Best Electronics in San Jose, California.

I'm not sure what to say about the "credit" issue. Many moons ago I got a copy of the original D.G. Byrd modification and it was the first one I installed. It was a Big success at Status and my review of the procedure was published in our newsletter. Shortly after our exchange newsletters went out, I got a letter from Dr. Jay Torres of the WindHover Project. He proceeded to inform me that the modification by D.G. Byrd was "a direct copy and compilation of the WindHover articles." Since then I have been very careful to "pass on" information as received and tried not to get into the fray between Mr. Byrd and Dr. Torres. For a while I passed out both copies to anyone requesting an 800 modification. When the Axlon compatible revision by WindHover came out I discontinued dispensing the Byrd mod. Since receiving "Revision D" by Mr. Byrd and encouraging reviews of its installation by a fellow club member, I have started sending it out with a note to emphasize it as the latest and easiest to install.

Let me thank you, Jeff, for suggesting that readers enclose $1 for the memory mod reprints offered in the July 1987 column. I have received over 100 letters requesting the memory mods. We had requests from as far west as Hawaii and as far east as Spain. The problem has been that most requests asked for All the mods. The one hundred requests equate to 700 + individual copies of modifications as I now have 17 mods that I have been sending out. To say the least, a dollar doesn't cover the cost of reproducing all of them. Add to that the postage (I finally went 3rd class printed matter rates) and cost of large envelopes and we could have had some negative cash flow. But thanks to the generosity of many Atarians who sent contributions over and above the recommended one dollar, we have been able to respond to every request and have not had to dig into our treasury (yet)! On, yes, I must not forget the half price special on copies really helped a lot too! It's been a lot of work, but it's also been enjoyable.

Dick Litchfield
Virginia Beach, Virginia

As readers may remember in the July 1987 column, Dick Litchfield and STATUS (the Southside Tidewater Atari Technical Users Society) offered to send copies of any of the memory modification projects they had to interested readers. The newer modifications are "The 800 Plus 256K, Revision D" by David G. Byrd, the "320K-/576K Memory Upgrade for the 1200XL" by Thomas H. Lawless, and the "320K/576K Upgrade for the 800XL" by Lawless. Readers interested in these reprints or in the reprints listed in the July column can write to the Southside Tidewater Atari Technical Users Society at 1805 Saint Regis Circle, Virginia Beach, VA 23456. In addition to a SASE, I would highly recommend including an appropriate contribution to cover the group's time, trouble and photocopying expense for the number of reprints you request. And once again, I thank Dick Litchfield and STATUS for taking on the task of making these memory modifications available to all of those individuals interested in making the most out of their Ataris.

As for the "credit" issue, there have been many conflicts over who exactly is responsible for certain modifications, and the David Byrd-Jay Torres conflict is one of them. Each of these authors has placed notices on their articles barring the other from reprinting or modifying any portion due to failure to give proper credit in the past. That many authors work on these projects and place them in the public domain for others to use and share is terrific. And one of the benefits of the public domain status is that others can improve upon an individual's work and ideas so that perhaps an even better project evolves. As long as the original author is credited and the improved modification is not being sold for a profit, everybody is usually happy. Many of the conflicts and accusations of plagiarism that I have seen in this area result from the failure of an author of a project article to give credit to the originator of the project concept. Over the past year, I have seen maybe twenty XL/XE memory expansion modifications in various user group newsletters all with essentially the same design concepts, but with different authors and illustrations.

I am in no position to judge who was first with any particular idea and when I list projects and their authors, as I did this month, in July and in September, I am merely passing along the title/author information that appeared at the top of the project reprints for identification purposes.

To current and future project designers who intend to place material in the public domain but want to ensure that proper credit is given them, I offer the following advice: Copyright your project articles. The cost is $10 to register a copyright, and you can obtain the necessary forms by writing to the Library of Congress, Copyright Office, Washington, DC 20559. Then, along with the copyright notice on your article, include a message stating that your project may be freely reprinted or modified provided that you are given credit. Should you later find that someone has copied your work without giving you credit, you will now have legal recourse, and more importantly, a means to verify the date of creation.

While on the topic of memory expansion projects, and having mentioned Dr. Jay Torres, the following is a letter I received from Dr. Torres:

Dear Jeff:

I was very pleasantly surprised to see both myself and our group, The WindHover Project, mentioned in your July 87 column of Applying The Atari. Our group is primarily involved in the advanced applications of the Atari computer. These applications include, but are not limited to, robotics, telecommunications, education, higher languages, artificial intelligence, hardware enhancements and software development. We publish a bimonthly newsletter containing mostly original material and try to shy away from reprints of other newsletters whenever possible. We also operate a BBS system for the benefit of our members.

I became interested in the Atari PCs in 1979 with an Atari 800 which became the keystone of my first system. At that time I had a whopping 16K of RAM which quickly got used up. Even when I expanded it to 48K I found that this still was not enough to do what I wanted.

In 1980, Axlon first introduced their 128K RamPower board but at $300 I, along with many other Atarians, was left out in the cold. Rather than give in, I gathered information on bank switching and built a 64K memory board for the 800. This was adapted for the Atari 400 as well with the help of Jerry Rombert, also of the WindHover Project.

As time went by I continued to build on the modifications for the Atari 800 until it reached its final form as the WindHover SuperRam 256K Expansion Modification yielding a total of 288K. This extra memory is controlled by a disk operating system-based on DOS 2.0.

Although I own the copyrights on the SuperRam Modification series for the Atari 400, 800, 130XE and Atari 520ST, I have placed these in the public domain to be used and further worked on by other members of the Atari community.

Individuals interested in obtaining a copy of the flyer containing all the information needed to build any of these modifications are invited to send a SASE to me and request it. A double sided disk containing the DOS needed to run the memory modifications is available for $10. This will provide a double density ramdisk or two single density ramdisks.

The information is made available freely to all user groups provided full credit is, of course, given both to myself and the WindHover Project.

By the way, if you are interested in publishing any portion of the SuperRam Series just let me know. With the declining level of support we eight bit users are getting, it's up to us to put the world on notice, we won't just go away.

Dr. Jay Torres, President
The WindHover Project
Bellevue, Nebraska

Newsletters

In the mail for this month comes the PACUS Report, the newsletter of the Packerland Atari Computer Users Society ($15/yr, 2714 S. Eleventh Pl., Sheboygan, WI 53081). The August/September issue contains an article on DOS 2.0/2.5 file structure, game tips and hints for a variety of 8-bit pro-

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COMMODORE

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operating capabilities. I am of the philosophy that software should be as user friendly as possible, and control codes do not fall in that category. Perfect Writer handles very complex formatting and printing functions without the use of control codes and is far easier to use than WordWriter. As I said earlier, Perfect Writer is far from "perfect," (it will not format a document longer than 20 pages including automatic Table of Contents and Index; it has some limitations on the number of special formats available in its environments, and it requires two disk drives to get all the plusses inherent in the systems design), but it does have a tremendous capability that I have used many times in graduate study papers (up to 25 pages long using formatting workarounds). How many word processing programs allow instant access to 7 documents held in memory at one time or allow the writing/editing of two documents on the screen at the same time? In addition, documentation is some of the best I've seen anywhere.

It seems that the misguiding is being done by your magazine. I know that there are many people out there who have found the solution and who consider Perfect Writer to be a very user-friendly and effective word processor. I only regret that CBM did not see fit to provide the fix with the software package nor provide the information to make the software work. My problem is not with Perfect Writer, but with CBM. They consistently refuse to support their products or follow through on promises.

Conclusion

Since this is the readers chance to speak, I'm not commenting on any of the comments. As you can see though, there are quite a few people who are happy with the word processor(s) they use. Perhaps something in one of these comments will help you decide to increase the number of word processors that you own. As some have pointed out, having two programs with different capabilities is sometimes the only way to do everything you want to do. With Commodore word processors being so inexpensive, owning more than one is often a viable option. ●

Commodore First To Ship PC With Multitasking, Open Architecture And MSDOS Compatibility

The Commodore Amiga 2000, a multitasking, open-architecture personal computer with the option for MSDOS compatibility, is now being shipped to dealers nationwide.

"This is the first PC to combine the power and versatility of multitasking with an open bus. While several leading PC manufacturers have been promising such a multitasking unit,Commodore is the first company to actually produce and ship one," said Rich McIntyre, Senior Vice President of Sales and Marketing.

Multitasking

Multitasking permits users to address word processing, spreadsheet and graphics projects simultaneously with minimal effort. For example, while a mailing list database is sorting 5,000 addresses by zip code, WordPerfect for the Amiga can be loaded and a graphics program opened.

In addition, with the Commodore Amiga 2000, it is now possible to cut and paste as well as transport files between two or more running application programs. This capability extends to simultaneously running MSDOS and AmigaDos files.

Open Architecture

Open architecture, another new design feature in the Commodore Amiga 2000, permits alteration and expansion of the controller for added flexibility and functionality. The Commodore Amiga 2000 bus contains eight expansion slots, one to accommodate the new XT-compatible Bridgeboard, model A2088D, for PC compatibility and access to the vast MSDOS catalog of software.

The other seven bus openings will accept optional boards for added memory and increased speed. To maximize the desktop presentation capabilities of the Commodore Amiga 2000, video genlock and digitizers, hard disk controllers, network interfaces and co-processors can also be built-in.

The Commodore Amiga 2000 comes standard with CPU, keyboard, mouse and power cable for a suggested retail price of $1995. The RGB Analog color monitor is available for a suggested retail price of $1995. The A2088D Bridgeboard is available at a suggested retail price of $499.95. ●

Maxiplan 500

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addition, there are a few templates for immediate use; a print spooler; mailmerge program and Maxiset, which allows you to set voice parameters.

For those who may be frightened of mice, it would do well to mention that Maxiplan supports full keyboard input for most functions and that two function key templates are supplied, one for the Amiga 1000 and the other for the 500 and 2000. Such thoughtfulness is not always found and it is to be appreciated.

And all the foregoing should help to explain why I've chosen Maxiplan 500 as the Best Spreadsheet of 1987.

Maxiplan 500 is available from Oxxi, Inc. at P.O. Box 4000 in Fullerton, CA 92634. Suggested list price is $149.95 and 512K is required. While a single drive will suffice, two are recommended. The program is not copy protected and a macro program is available separately. ●

The Best of ST

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In our simulation game, I'll play my golden retriever, Pete (supplying his answers of course), and the computer tells me that I get to go first. By the way, the first name typed in doesn't necessarily go first.

In this case, the puzzle is a two-line fictional character.

I spin, and choose to do a medium-strength controlled spin. The colorful wheel (graphics in this game are superb, especially for low resolution) spins for about eight seconds, and I am cheered on with the expected "Let's go now!" and "Big money! Big money!" messages on the ubiquitous message board. I guess a correct letter and spin again. This time I land on bankrupt, and the message board almost sighs, "Oh no! Bankrupt!" In this case I would have definitely preferred Vanna. The game continues as expected, and Pete is having a dog of a time guessing letters. I guess a couple more correct letters, and then the puzzle, "PRINCE CHARMING." Ah, the thrill of victory and the agony of defeat.

And to top it off, if you do really well, you get your name added to list of all time big money winners. My kids, in particular liked this feature.

Wheel-Of-Fortune is a superbly-implemented game, and what is most amazing about this is that it was written in GFA BASIC then compiled with GFA's BASIC Compiler. The graphics and mouse interaction are as good as you will find in commercial programs, and the program runs as fast as the average commercial program, which I would assume was written in "C." I'd love to get a copy of the source code just to see how this is done. Although Bob Pyle is undoubtedly better than your average programmer, this program does show "the rest of us" to borrow a phrase, that a language often scorned as beginners' stuff can be used to produce commercial-grade software.

Documentation for Wheel-Of-Fortune comes in the archived file you download off of your favorite BBS or commercial service. The documentation is thorough and lucid, even going into such self-explanatory items as entering players' names.

Since many users of this program will be making up their own puzzle files and/or downloading and using those on the BBSs and services, the file selection documentation includes the important detail of leaving the disk containing the puzzle file in its drive throughout the play of the game.

A nice feature of the Wheel-Of-Fortune package is that most of it (excepting only a DELIMIT program used to set up puzzle files for database incorporation) can be run from an included shell program, WHSELL.PRG.

WHSHELL presents a simple menu with five choices: FILE EDIT, FILE CODE, FILE LIST, PLAY WHEEL, and EXIT.

FILE EDIT, as you might have guessed, is the program used to create and edit puzzle files. The editor is simple to use, with the cursor keys, space bar, backspace, and delete keys doing exactly what you would expect them to. Once you have your puzzle arranged on the working board the way you want, you hit the F10 key, and are asked for a category, which you type in and hit return. To edit a previously-done puzzle, you key F1, enter the puzzle number when requested, and edit the puzzle just like you would a new puzzle.

To aid in getting the magic number of 104 puzzles into a file (you have to have that exact number for a puzzle file to work), the program lists the puzzle number in the upper-left-hand corner of the EDITOR screen.

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Mac Graphics

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the most significant upgrade of all. VideoWorks II gives you the ability to import digitized sound files to VideoWorks animations. It can play these back in real time, without perceptibly slowing the graphic animation. This means the ability to pefectly synchronize animation to digitized sound. We'll get right back to this topic after we introduce you to the Impulse product.

Impulse Audio Digitizer Humanizes Mac

In the beginning, there was the beep. Then there was square wave (pure tone) synthesis. When Macintalk came along, we all appreciated the fact our Macintosh could speak in plain (well, nearly plain) English. Remember the good old Talking Moose?

Macintalk is important, because it uses a small phoneme set to create all the sounds it needs. Macintalk will remain important, too. But without meaning it any sleight, there is something deeply dissatisfying about the way it sounds. It sounds, well, terribly computerish. It drones, it intones artificially, it emphasizes mechanically. It speaks with an annoying accent. When you listen to Macintalk-generated speech, you really know you are being addressed by a machine.

It was early 1985, and I believe the game was called "Airborne." The game itself wasn't very good, but booting the disk blew you away. Out the tiny, tinny Macintosh speaker came Wagner's "Valkyrie," setting you amind to the bombing runs of "Apocalypse Now." This was not square wave synthesis, or even complex analog synthesis. This was the real thing. This was an orchestra—you could pick out the instruments. This was the first commercial appearance of digitized audio, and it was extremely impressive.

As opposed to Macintalk, digitized audio sounds completely natural. It gives you a really good reason to plug an audio jack into the back of your Mac and pump the sound through an audio amplifier. Then it sounds startlingly good. They scoffed at Jobs when he delayed the Mac because he felt its audio capabilities were not up to snuff. Now we may thank him for this.

An equal debt of gratitude is owed to a group of zealots located in the state of Minnesota. Born MacNifty, they

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The Best of ST

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Files created by the FILE EDIT program have a .PZ extension, and are then ready to be encoded for use in the program. Before doing that, however, I would advise using the FILELIST program to obtain a list of the puzzles and avoid duplications, misspellings, and other assorted errors. If you find errors or just something you want to change, you can reenter the EDIT program, go directly to the particular puzzle, and make your recommendations.

Once you get your puzzle size to the appropriate size and content, you then encode it by running it through the FILECODE program. This encodes the puzzle file and prevents cheating by anyone other than the puzzle's creator. Files created by the FILECODE program have a .PUZ extension, are ready to be used by the Wheel-Of-Fortune program, and may be placed on your game disk or a separate puzzle disk.

I personally recommend a disk set up with the game and completed puzzles, and a separate working disk for editing and creating.

One final part of the "WHEEL" package that bears noting is the DELIMIT program, which takes a .PZ file and converts it to a .DTA file usable by such databases as Zoomracks. For those using the "WHEEL" program in an educational setting, this is a handy feature. For the rest of us, DELIMIT's use will be, you guessed it, LIMITED.

Wheel-Of-Fortune is shareware at its best. Programmers like Bob Pyle deserve your support. Download the program, and send Bob a donation and a note of thanks.

To get your copy of Wheel-Of-Fortune check your local BBS or go to the Atari ST roundtable on Genie to the roundtable library section and download number 3311 which is labeled Wheel-Of-Fortune VII.0. ●

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Applying The Atari

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grams, a player/missile graphics article, news and reviews, and ST articles on GFA BASIC and Avant-Garde's PC-Ditto.

The August issue of JACG, the Jersey Atari Computer Group ($25/yr, 8 Crescent Rd. Pine Brook, NJ 07058) had reviews of ICD's Multi I/O Board and 221B Baker Street and articles on artificial intelligence, desktop publishing, and translating Pascal and BASIC into C.

The POKEY PRESS is the newsletter of Atari Computer Club of the Palm Beaches (P.O. Box 1526, Boynton Beach, FL 33435). The August issue contained details on the Summer C.E.S., 8-bit product reviews, and an article on ST desktop publishing.

The ACORN KERNEL is the newsletter of the Atari Computer Owners of Rochester, New York (P.O. Box 23676, Rochester, NY 14692). The August issue contained numerous articles on the 8-bit and ST including reviews of Sub Battle Simulator and of the Astra System HD+, and 8-bit short-cut programming tips.

The August newsletter of the Atari Users Group of Knoxville (9553 Roderick Rd., Knoxville, TN 37923) contained articles on surge protection, DBASIC for the ST and a book review of Atari Player-Missile Graphics in BASIC.

The Michigan Atari Magazine (P.O. Box 16132, Lansing, MI 48901) is a cooperative publication of CHAOS, GAG, TAG, BKAUG, WAUG, CKAUG and GRASS. The August issue contains Atari news, reviews of 8-bit and ST software, and an ST articles on C Language and disk directories.

Pie In The Sky

With many software and hardware manufacturers concentrating their efforts on the ST machines, pouring out an endless stream of new ST software products and peripherals, many 8-bit Atari owners have felt somewhat abandoned, or at least neglected. But as Joseph Ennis of Niceville, Florida demonstrates, many of us are still hooked on our 8-bit machines and continue to dream up new ways to utilize or improve this low-cost wonder. Joseph writes:

"I want to buy a product that doesn't exist! I can visualize what it looks like, what it will do, and a lot of its schematic. I know why I want it. I want it because I want to keep my 8-bit Atari computer! My Atari computer is quite comfortable to use, its cost is already paid for and I have a lot of useful software, which has cost me many times the cost of the computer. I am far from finished exploring the 8-bit Atari's capabilities. I like the 6502 assembly code better than the 68000 code and far, far better than 8088 code! Finally, I have spent a lot of time learning the machine, and until it starts to bore me, I do not wish to relearn another machine. So what is the problem? Well, I have always felt restricted in the area of Atari graphics, disk speed and sound. Mostly the graphics. I keep wishing that Atari had put at least one more bit in the GTIA registers. I really want (and need) more than 320 pixels per line and more than 3 foreground colors plus one background color. I would like more colors in a player and more pixels. So what's the solution? I think someone should design a hardware add-on that provides the XLs and XEs with the capabilities that they appear to lack. I think it can be done but I don't know if it can be done cheap enough to have a market. I'll probably build one for my own entertainment, but it won't really help unless lots of Atari owners have this enhancement board—I can't write all of the software that I would like to have by myself! So I would want hundreds of thousands of other 8-bit Atari owners to also buy this product.

What is the product? The design specifications for my "GRAPHICS BOARD for Product Life Extension of Atari 8-bit Computers" are as follows: (1) Compatible with all Atari 8-bit computer programs, (2) Output is to be RBG with four new formats as well as the 16 current Atari graphics formats: 640x200 (normal 80 column), 640x400 (two 640x200 for screen flipping or one HiRes screen), 640x350, 720x348 (EGA type screen). The graphics board will provide up to 16 colors per scan line of a palette of 4096. There will also be a monochrome composite video output and a color composite. (3) Regarding physical size, power and weight, the circuit will reside on a 6x12 double sided printing wiring board inside a 7x3x1 3/8 plastic case. The case is sized and styled to match and fit under the 1050 disk drive. Power regulation is on the pwb and the power transformer is in the power cord as is customarily found on Atari components. Weight is not specified, but chip count should be 36 or less. (4) The interface between the Graphics Board and the 8-bit computers: For the 800, there is the possibility that the board wil be internal. The interface to the XL will be a 36-conductor ribbon cable connecting to the bus extension connector on the back of the XL. On the XE, the interface will be a 36 conductor ribbon cable that connects both to the bus extension and cartridge jack. A special connector, one similar to the one ICD uses on their R-TIME-8 module, will be needed. (5) For the software interface, cooperation is needed from a software house that currently provides a custom DOS for the Atari. My choice would be OSS with DOS XL or ICD with Sparta DOS. It is planned that the I/O part of the Graphics Board interface will look like a "full track" Disk I/O buffer to the DOS software. (6) For the system interface, the Graphics Board will have an 8K static RAM sitting on both the Atari CPU bus and the Graphics Board bus. It will be at different physical address space on the two buses. On the CPU bus it will be located in the area where the disk buffers are located and try to appear to DOS as if it were a full track buffer. DOS would support READ's and WRITE's to it like it was a disk buffer. This 8K SRAM has been designed to have a LS157 acting as a digital switch on its address and data lines. The LS157 normally connects the SRAM to the Video Bus except when the Atari CPU wants to read or write to this address, at which time the LS157 snatches the 8K SRAM away from the Video Bus and gives it to the CPU Bus for a few clock cycles. The 8K SRAM will have the lowest physical memory locations on the Video Bus. The 8K SRAM is logically divided into two 4K blocks, the low 4K block transfers machine language code between the Atari CPU and the Slave Processor on the Graphics Board. The upper 4K block transfers a 4K block of video data between Video RAM and the Atari main memory. Once the Atari CPU has transferred video processing to the Graphics Board, it disables its own video processing interrupts (with a write to memory location $22F) so it can run faster. Upon RESET the Atari will resume video processing until program control returns control to the Graphics Board. The Slave Processor on the Graphics Board has a ROM that gives it a translation table to Display List code into 6502 machine language instructions. The Slave Processor is designed so that on a hardware reset it jumps to the highest memory and reads an absolute JMP that jumps it a little lower in memory, but still within the ROM. First it finds its initialization instructions, then it finds the initialization instructions for the CRT controller chip (6545) then for the Video Palette chip (TMS 34070). After initialization, the Slave Processor jumps to the Video Bus address 0000 and starts executing the Display List it finds there. During initialization, the Slave Processor wrote a Graphics 0 display List into this location. As the Atari CPU, under program control, needs other graphics modes, it rewrites the appropriate Display List into the low 4K of the 8K SRAM starting at the lowest address. The RESET key on the Atari computer forces hardware reset on the Graphics Board. (7) The target cost is set to be the same as the list price of the 1050 disk drive,

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TI Forum

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way, you can do such things as show the name of the caller on your screen, while everything looks exactly the same as it always has to your users. Needless to say, this allows for many other possibilities for the creative Sysop.

"One feature which may be of interest to those who feel that their Board program is too long is a pair of routines which send a string to your screen and the user, but executes a carriage return and linefeed if a backlash character (\) is encountered. What use is this? When you have a number of short lines of text to display, it is very wasteful to spend a separate Call Link on each. Now, for example, you can give a routine the string "\Hi there!\Welcome to Techie!\ You're caller 9999!." Using just the one statement, you have sent 4 lines of text to the user, the first of which being a blank line. Again, the creative can find a number of uses for this. For printing text which contains backslashes you want to show, the old printing routine is still supported.

"And how much am I hoping this product will be worth to you? $10-15. It is fairware, a concept I'm sure is well understood in our community by now. If you would like a copy of these utilities, send a disk and mailer to me at Box 958CC, Mount Vernon, IA 52314. I will send it back out within a few days. You may get the code through other channels, but I suggest going through me so that you can be user of the latest version. Future enhancements are likely to include sensing of caller's connect baud rate up to 9600 bps and support for these speeds (I currently have this routine on my BBS checking for 300 or 1200), and improvements suggested by the public. I will not ask for any additional payment for these when they become available."

To see Reiss' routines in action, you can call his Techie bulletin board at 201-679-0549, a number that is accessible via PC Pursuit.

With the continuing success of PC Pursuit, a $25/month flat rate long distance data service, bulletin boards in major metropolitan areas are seeing a resurgence of activity. With PC Pursuit and other pay networks available, the TI community may be able to unite electronically.

This unification is important if not necessary to the welfare of the TI world. An earlier *Computer Shopper* column about the state of TI users groups across the country drew a lot of response. One letter in particular, from Ralph Glattli of the West Jax 99'ers (P.O. Box 176, Orange Park, FL 32067), underscores the need for creative approaches to inter-group communications: "I believe in the article...about the problems of the user groups. We know what you're writing about. We have dwindled from 75 to 13. Seldom do we have any new faces come to our meetings...The true blue of us hang on, but it's gettng difficult. We barely make the postage on our newsletter. We all read every newsletter we get. If we don't get some new blood soon we'll have to give up some of the things we enjoy...We recently closed our library; it had been open to all members Free."

To begin to help with this particular problem, we can ask that any users group that doesn't have to West Jax 99'ers on its mailing list should be sure to include them. But the West Jax group isn't the only one out there that is having trouble treading water. And how many users groups could afford the increase in postage costs associated with mailing to all the other users groups? It seems that the U.S. Mail is not a permanent solution to the problem of information interchage.

It is time for a widespread effort among all TI users groups to investigate linking electronically. Perhaps via PC Pursuit and strategically placed local bulletin boards news and programs can be routinely disseminated. Pay networks, such as Delphi or CompuServe, offer local access almost anywhere in the United States. Each users group could appoint or elect a telecommunications representative, who would access the services to both receive news and data from other groups and send information that would normally go no further than the group library or newsletter. Uploading is free on the major pay networks, so the only cost involved comes from downloading information that others have placed there.

Sysops have indicated a willingness to make the access of that information as straightforward and cost-effective as possible. For example, Jim Horn, sysop of CompuServe's TI Forum, has offered to set aside specific sections within the TI Forum users group designated representatives. Horn also brought up the possibility of a TI Forum-sponsored users group online conference to hash out plans for such an exchange of information.

Electronically or through the mail, communication is the key to the survival of both the TI-99/4A and Myarc 9640 computers. Users groups or individuals interested in supporting the organized exchange of information are encouraged to contact *Computer Shopper* and the pay network Sysops.

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or otherwise functions would have to be traded off to lower the price. I would cancel the project if the cost were expected to go three times above this cost. (8) Hardware Realization: the principal chips are the 8K SRAM (150 nsec), 6264, the Slave Processor (65C02 or 65C816), the CRT controller (65B45), 256K dedicated DRAM (if Allen Macroware of Redondo Beach, California can sell a 256K memory board for $82.95 then there is a chance that the Graphics Board can be brought to market at $160), the Video Palette is a TRM 34070-66 (Texas Instruments), the RGB to composite chip is a MC1377P (Motorola), the Dot Clock module is a 14.318181MHz clock module from Hughes Crystal, Huntsville, Alabama. There will also be a 5-LS157, 4-LS244, 3-LS373, 3-LS166, 4-LS153, a LS151, a LS193 and a 2764 with possibly some additional glueware chips plus 3-2N2222 as emitter followers to protect the 34070 from accidents on the video output lines. (9) Hardware Realization, Other functions: Add a floppy disk and hard disk controller port. The floppy port is to be SASI and targeted to allow the use of the double density double sided drives used by the IBM PC and clones (twice as good, many times faster and half the price of the 1050). The object is the higher cost of the Graphics Board could be justified by allowing these SASI drives to be the second and above disk drives (keep one 1050 so new Atari software could be read into the system). If an Atari owner is going to buy a second or third drive, there would be a saving and a great boost in performance to go with the Graphics Board and a Tandon or Teac or other DSDD SASI drive. The floppy controller chip will be a Western Digital FD1770 (or maybe a 2793). Add track and socket on the pwb for a Real Time Clock chip to be used by DOS for dating. Something like ICD uses in their R-TIME-8. Add track and socket for a Math Coprocessor chip such as the National MM57409 (40 pin, costs a tenth as much as the Intel chip). And finally, add track and socket for the Sonic chip and a MIDI interface.

Joseph Ennis
Niceville, Florida

Those ideas are interesting and exciting. We would have quite a system if we could add one of your Graphics Boards for $160. But you realize, of course, that there are a number of technical obstacles that would have to be overcome (with both the hardware and software interface) to make this idea a reality. And realistically, when both hardware and software development is considered, I'm afraid we may be looking at a market price much greater than the price of a 1050 drive. But it was fun to be teased with these potential features, and who knows, maybe the folks at ICD have already put one of these things together!

Next Month

Our holiday column is next month and we'll have information on some of the newest prodcts available for the 8-bit Atari for this holiday season. We'll also have more reader mail and newsletters.

Reader's questions, comments and contributions are welcome. Please enclose a self-addressed, stamped envelope (SASE) for a personal reply. Due to volume of mail, only a selected number of personal responses can be given each month.

"Program Perfect" is a utility used to check for typing errors when entering programs from this column. Readers can send $5 for a diskette or a SASE for a listing of this program.

Address all correspondence to: Jeff Brenner "Applying The Atari 11/87" c/o *Computer Shopper*, P.O. Box F, Titusville, FL 32781-9990. ●

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